Chapter 9
AP4 Center Evaluation and the Role of the Center Evaluator

The purpose of evaluating an AP4 center is to measure the effectiveness of its research projects and of the center as a whole in reaching its long- and short-term goals (research project evaluation is covered in Chapter 7). AP4 center evaluation results can provide new insights or information that contribute to subsequent decision making about center management and research directions.

The evaluation process should not be an afterthought 1 to 2 years into the life of the center, but should begin during the center design phase. The AP4 center director and center evaluator should involve as many center investigators and partners as is practical in beginning the evaluation process.

AP4 centers might find the method described here to be valuable in guiding their evaluation planning, but each center should select the evaluation method—whether it resembles the method described here or not—that is most appropriate to the center's unique structure and research program.

Steps in the Evaluation Process
The evaluation process described below consists of developing a model of the AP4 center's structure and expected outcomes, identifying questions to include in a survey of center partners and investigators, determining a means of analyzing survey results, and selecting various ways to disseminate the results to the center's stakeholders.

Developing a Logical Model
To carry out an effective evaluation, everyone involved in the design must have the same solid understanding of what will be evaluated. A logical model of the center's structure and expected outcomes should therefore be developed. Having a logical model, or diagram (Figure 9-1), ensures a common understanding of the center structure and its expected outcomes, and helps focus the evaluation on elements most critical to achieving center goals.

Figure 9-1: Logical model

(use figure on p. 10)

The logical model shows connections among:
- Inputs—Such as funding and in-kind contributions from the NCI, partners, and other sources.
- Activities—Such as orphan cancer-relevant target validation, development of low- or high-throughput screens, confirmation of initial hits from high-throughput screens, identification of new potential center partners, or student involvement in projects.
- Short-term goals (immediate results of activities)—Such as identification of lead candidates, acceptance of new partners to the center, or enhanced student knowledge of specific screening processes.
- Long-term goals (broader and more enduring impacts

on the system)—Such as selection of clinical candidates, filing of patents on new drugs or targets, filing of Investigational New Drug Applications, development of the center as a self-sustaining entity, or training of students who are knowledgeable in cancer intervention development.

Evaluation design teams often find it useful to work backwards, starting from the desired long-term goals and then determining the critical conditions or activities that must be in place before these outcomes can occur.

Once the logical model is developed and connections among the components are established, the sequence and timing of activities necessary for achieving center goals should be determined. This should be addressed during the effort's planning phase, and the time schedule should be reviewed periodically to make sure it is still reasonable.

Selecting Survey Questions

At this point, evaluation planners should be able to create a list of questions for the survey of center partners and investigators based on the logical model and its activities, goals, and timelines model. The purpose of the survey is to allow these key stakeholders to assess AP4 center processes and outcomes.

Questions to be addressed to center partners may differ from those addressed to center investigators (see Appendices 9-1 and 9-2). Stating questions in a form that can be answered quantitatively will greatly

> **Figure 9-2: Criteria for selecting survey questions***
>
> - Does the question contribute information on the extent to which the project meets its goals and those of the AP4 center and its partners?
> - Who would use the information?
> - Does the answer to the question provide information that is not currently available?
> - Is the information important to several stakeholders?
> - Will the information be of continuing interest?
> - Can the question be translated into measurable terms?
>
> *From: Frechtling, pp. 21–2.

facilitate data analysis. Suggested criteria for selecting survey questions are listed in Figure 9-2. The director and evaluator may also consider developing versions of the surveys for other stakeholders, such as students and staff.

Administering the Survey

The first surveys should be administered 1 year after the center's implementation (not counting the planning year) and on an annual basis thereafter. Surveys should be sent with a cover letter explaining the purpose of the evaluation and noting the evaluator's contact information in case participants have questions. Survey respondents should be told clearly why the data are being collected and how the results will be used. If possible, they should be assured that their responses are confidential. After the surveys have been administered more than once, the reports should emphasize major changes in outcomes or satisfaction over the reporting period.

To maximize response rates, evaluators should follow up by letter, telephone, or e-mail with individuals who do not complete the surveys. One possible approach is to send the surveys out a few weeks before the semiannual meeting, and then approach those who have not responded at the meeting.

Analyzing and Reporting the Results

The center evaluator will analyze the survey results. Depending on the number of individuals surveyed, analyses may be straightforward or relatively complex. As stated above, designing questions that can be answered in a quantitative manner (ranging, for example, from 5 = strongly agree to 1 = strongly disagree) will facilitate the analysis process.

The center evaluator is also responsible for writing a summary of survey results. The summary may be issued as a separate report or as part of the evaluator's report presented during each steering committee meeting. A list of potential report sections follows.

Background: A description of:
- Problems or needs addressed by formation of the center.
- Resources used to implement the center.
- Center's expected measurable goals or outcomes.
- Stakeholders and information they need.
- Brief overview of center activities.
- Any constraints in what the evaluation was able to do.

Evaluation questions and analysis: This section lists the questions asked. It may also list important questions that the study was unable to address.

Findings: This section reports the results of the analyses. The findings may be organized by evaluation question. Each question should be included, even if a satisfactory analysis cannot be provided. Pointing out inconclusive data is as important as giving positive or negative answers to evaluation questions. The findings section may end with a summary of major conclusions (those pertaining to the highest-priority questions or for which findings are particularly strong).

Conclusions and recommendations: This section provides more broad-based and summative conclusions. These statements should relate to findings regarding short- and long-term center goals. All recommendations should be based on data-supported findings rather than anecdotal evidence.

In addition to the above sections, the evaluator might include a short abstract that summarizes the evaluation and its findings.

Disseminating the Findings

Different reports may need to be provided for different audiences (see Figure 9-3 for a list of potential audiences for AP4 center reports). The information needed by each audience should be identified early in the center's development.

In developing a dissemination approach, you should consider what each audience needs to know and the best means of communicating that

---

Figure 9-3: Audiences for AP4 center findings

- The NCI.
- Center partners.
- Potential partners.
- Center investigators.
- The cancer research field.
- Members of the public.

information. For example, the NCI will require a formal annual report with technical details and an executive summary that highlights the findings. This report should link the project to the NCI's goals for the AP4 center program and show how accomplishments relate to these goals. The report may also show how the projects contributed to the research or knowledge base in the field. Although center partners will want much of the same information, they will also want to learn how the project or center addresses the goals of their organizations and those of the AP4 center. A report for the public, if a center chooses to produce one, is likely to be less technical and provide fewer details, while emphasizing the ultimate benefits of the research to preventing, detecting, diagnosing, or treating cancer.

Depending on the audience, reports may be in the form of journal articles, newsletter articles, newspaper articles, fact sheets, websites, or e-mails. In-person presentations at conferences or meetings that provide opportunities for interactive discussion can be valuable for obtaining feedback and ensuring that the findings have been communicated effectively. Such a format might be particularly appropriate for presentation to the AP4 center steering committee.

Responsibilities of the AP4 Center Evaluator
The NCI requires that all AP4 centers have an external, independent evaluator who is responsible for:
- Collating results of new and ongoing project evaluations as reviewed at steering committee semiannual meetings.
- Conducting exit interviews with partners who leave the center.

Figure 9-4: Issues to discuss during the exit interview*

1. History of the organization's relationship with the center.
2. Changes in the organization's expectations concerning the center.
3. The main factors that impelled the organization to withdraw from the center, including:
   - Economic factors.
   - Cost/benefit issues.
   - Needs issues.
   - Personnel issues.
   - Relevance to organization needs.
   - Relevance to organization strategies.
4. Direct benefits (such as new research ideas, students hired) from the center during the organization's affiliation.
5. Major center strengths.
6. Major center weaknesses.
7. Possibility of and requirements for rejoining the center.
8. General advice to center management and the NCI.

Adapted from: National Science Foundation, p. 33.

- Assisting in annual center evaluations by administering and analyzing the results of surveys to steering committee members and investigators associated with the center.
- Submitting reports to the center director that review center progress via center evaluations, results of individual project evaluations, and exit interviews, and that become part of the center director's annual report to the NCI.

The evaluator must attend the semiannual steering committee meetings and other internal center meetings. In addition to fulfilling these formal requirements, evaluators can play several informal roles, including:

- Serving as a liaison between the center and its partners.
- Troubleshooting center problems.
- Serving as an information collector and distributor at steering committee meetings.
- Linking the center to other center evaluators through information maintained on the NCI's Developmental Therapeutics Program (DTP), Division of Cancer Treatment and Diagnosis (DCTD) website, with the assistance of the NCI coordinator.

Exit Interviews

An important part of the evaluation effort is assessing companies and organizations that decide to leave the AP4 center. The center evaluator should collect detailed information on reasons why the organization decided to end its membership. A standardized exit interview guide should be developed so the same questions are asked each time a partner leaves.

Results of the exit interviews should be written up in a report that is shared with the center director.

Figure 9-5: Structure of the evaluator's report on the AP4 center*

1. *Overview*: A general overview of the center's status.

2. *Goals and objectives*: The center's primary scientific and organizational goals and objectives.

3. *Environmental/institutional*: Changes in the environment or the AP4 center's host institution during the reporting period.

4. *Organizational*: Changes in the center's personnel, structure, policies, financial status, and operations during the reporting period.

5. *Research program*: Changes in the center's research program (such as new cancer intervention project directions) during the reporting period.

6. *Center accomplishments*: Areas of knowledge/scientific advances, educational outcomes.

7. *Analysis*: Comments on the center's status and viability, including the implications of changes described in earlier sections of the report, whether the center is making adequate progress toward its objectives, and whether the research program is still vital and current.

8. *Timeline*: An updated timeline of significant events and milestones since the center was initiated.

Adapted from: National Science Foundation, pp. 12-13.

Evaluator's Report

The evaluator's report, which may be annual or semiannual, provides a narrative description of events, circumstances, and activities that contribute to the AP4 center development and growth. The initial evaluator's report should focus on ideas, plans, and initial activities that led to the center's creation. Subsequent reports should address changes that occur as the center evolves and matures, and on center outcomes and achievements. These reports provide the AP4 center director and the NCI with an evaluation from someone who is involved in the center and has an

objective perspective. The report also provides the NCI with a record of center progress and accomplishments.

Conclusion
Project and center evaluation activities should be an integral part of an AP4 center's management and oversight. The center evaluator distributes and collates project evaluations, center surveys, and exit interviews, and includes the findings in the evaluator's report to the AP4 center director. The center director should make the best use possible of the evaluation results generated.

References
Frechtling J. (2002). *The 2002 User Friendly Handbook for Project Evaluation*. The National Science Foundation. Available at: <http://www.nsf.gov/pubs/2002/nsf02057/start.htm>. Accessed July 22, 2003.

Gray D.O., Walters S.G. (1998). *Managing the Industry/University Cooperative Research Center: A Guide for Directors and Other Stakeholders*. Columbus, OH: Battelle Press.

National Science Foundation (2000). *Industry-University Cooperative Research Centers Program Evaluator's Handbook.* Raleigh, NC: North Carolina State University.

Trochim W. Introduction to Evaluation. Available at: <http://trochim.human.cornell.edu/intreval.htm>. Accessed August 29, 2003.

Figure 9.1 – Logical Model

Inputs	Activities	Short-Term Goals	Long-Term Goals
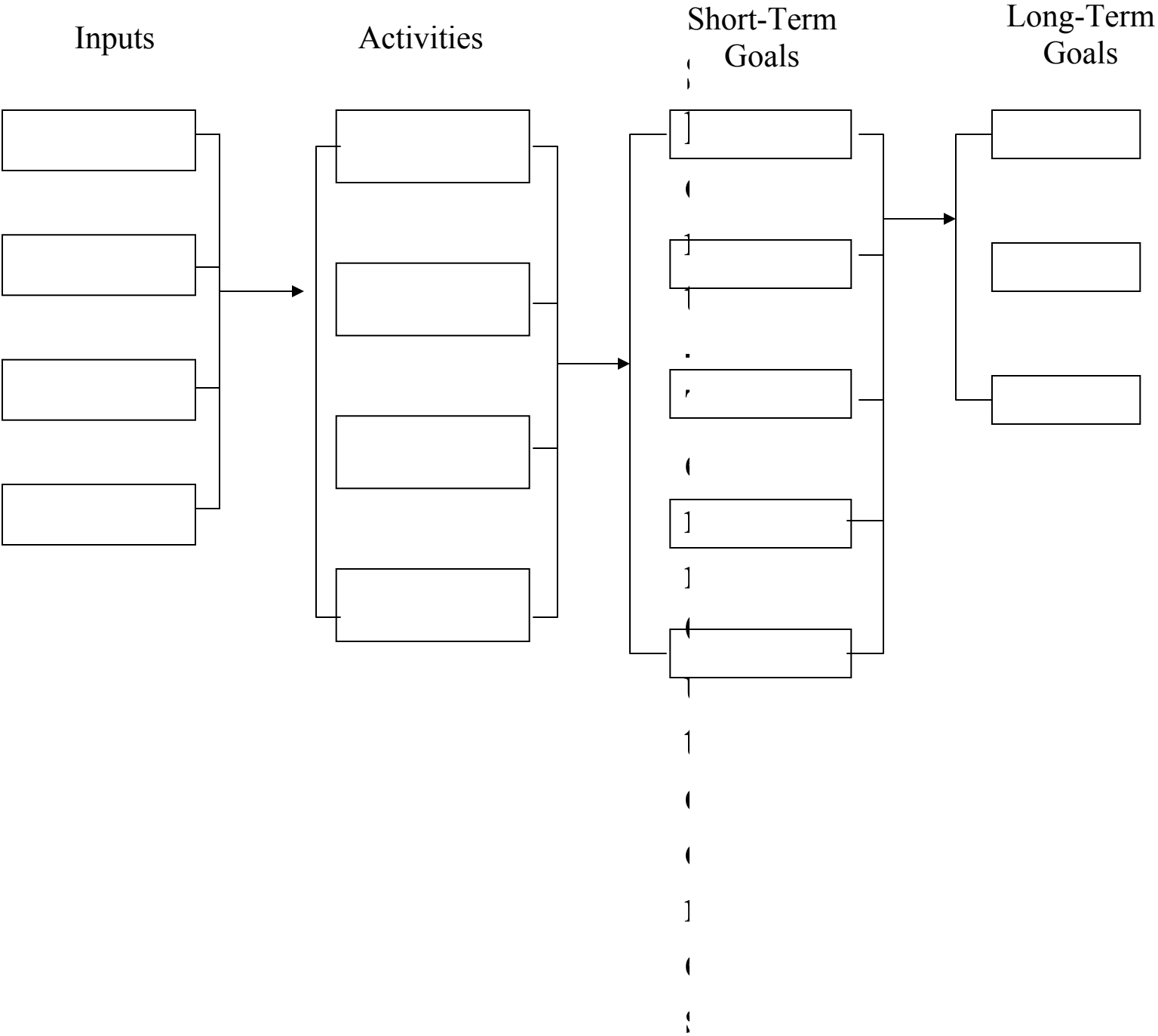
Appendix 9-1: Possible Survey Question Topics for Steering Committee Members*

Research Program
1. Extent of member's involvement in center research projects.
2. Relevance of center research projects to member's organization.
3. Satisfaction levels with:
   - Capabilities of investigators and graduate students.
   - Breadth of research topics covered.
   - Focus of research.
   - Scientific quality of research.
   - Innovative quality of research.
4. Relevance of research to organization's short-term needs.
5. Relevance of research to organization's long-term needs.
6. Suggestions for improving the center's research program.

Scientific Benefits
1. New research projects supported by member's organization.
2. Level of center's contribution to scientific benefits for the member's organization:
   - Increased general scientific awareness and/or capabilities in the area.
   - Accelerated or improved research projects.
   - Stimulated new research projects.
   - Contributed to development of intellectual property within organization.
   - Improved existing products, processes, or services.
   - Developed new products, processes, or services.
3. Comments on how organization benefited scientifically from participation in center.
4. Comments on how center could improve organization's scientific benefits.

Other Benefits
1. Center's contribution to:
   - Enhancing organization's ability to recruit talented students.
   - Improving cooperation with scientists and scientific resources outside the organization.
   - Improving cooperation with other center partners.
2. Satisfaction with:
   - Communication between center staff and organization.
   - Center-related proposals, reports, and publications.
   - Planning and development of research program.
   - Management of ongoing research projects.
   - Project selection process.
   - Technology-transfer issues.
   - Center fundraising.
   - Management of intellectual property issues.
3. Comments on how center could improve its administrative operations.

General Evaluation
1. Member's satisfaction with center operations and activities.
2. Whether organization plans to continue its affiliation with the center.
3. What the center can do to make renewal more likely.
4. Which center activities should be continued or maintained.

*Based on the National Science Foundation's Industry Questionnaire from the Industry-University Cooperative Research Centers Evaluation Project.

Appendix 9-2: Possible Survey Question Topics for Center Investigators*

Research
1. Compared to research projects typically conducted by the investigator outside the center:
   - Whether the center's research is more basic or more applied.
   - Whether the center's research is broader or narrower in scope.
   - Whether the center's research has a longer or shorter timeframe.
2. Number of publications by investigator based on center research.
3. Number of presentations by investigator based on center research.
4. Number of theses/dissertation supervised by investigator based on center research.

Investigator Outcomes
1. Impact of center participation on investigator's:
   - Opportunities for consulting.
   - Opportunities for research grants and contracts.
   - Access to equipment.
   - Chances for promotion, tenure, and/or salary increases.
   - Amount of interaction with other investigators.
   - Ability to support graduate student thesis/dissertation research.
   - Amount of autonomy in conducting research.
   - Ability to publish research results in timely way.

Benefits to Center Partners
1. Impact of the investigator's research on center partners in:
   - Research and development.
   - Commercialization of products, processes, and/or services.
2. Comments on scientific benefits to partners from the investigator's research.

Satisfaction
1. Levels of satisfaction with:
   - Quality of research program.
   - Relevance of research program to the needs of stakeholders (industry, consumers, NCI, the public).
   - Center administration and operations.
2. Comments on how the center can improve its research and/or administrative operations.

*Based on the National Science Foundation's Faculty Questionnaire from the Industry-University Cooperative Research Centers Evaluation Project.